War Eagle Bridge
Spanning the War Eagle Creek
at Benton County Road 98
War Eagle
Benton County
Arkansas

HAER No. AR-50

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ARK
4-WARE,
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
Department of the Interior
Washington, DC 20013-7127

HAER
ARK,
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HISTORIC AMERICAN ENGINEERING RECORD

War Eagle Bridge

HAER No. AR-50

LOCATION:	Spanning the War Eagle Creek on Benton County Road 98 in Benton County, Arkansas. UTM: 15/4013810/415280 Quad: War Eagle, Arkansas
DATE OF CONSTRUCTION:	1907
CONTRACTOR:	Illinois Steel Bridge Company, Jacksonville, Illinois.
PRESENT OWNER:	Benton County.
PRESENT USE:	Vehicular Bridge
SIGNIFICANCE:	The construction of the 182-foot-span at War Eagle was development in the growing economy in northwest Arkansas. Built by the Illinois Steel Bridge Company in 1907, the War Eagle Bridge is significant as one of six Parker through trusses in Arkansas. The bridge is located next to a reconstructed grist mill, which is fourth in a series of mills on the same site dating back to 1832.
HISTORIAN:	Kathryn Steen
DESCRIPTION BY:	Corinne Smith Arkansas Historic Bridge Recording Project, 1988.

LOCAL HISTORY

War Eagle, in the Ozarks of northwest Arkansas, is a place with a well documented history. "War Eagle" comes from the name of a Cherokee Indian chief.(1) In 1832, settlers Sylvanus and Catherine Blackburn moved into the area and set up a grist mill along War Eagle Creek in Benton County. Agriculture was the main industry and, in addition to the grain for the grist mill, tobacco and fruit were grown in the county.(2) The Blackburn family remained on the site of the original grist mill. A second was built in 1848, but was later destroyed in the Civil War. J.A.C. Blackburn, son of Sylvanus and Catherine and a businessman who developed wealth through the lumber industry, built another mill in 1873. This one survived until a 1924 fire. In 1973 a fourth mill was built, being a reconstruction of the 1873 version.(3)

BRIDGE PRELIMINARIES

Commercial traffic to the mill gradually increased, but the transportation was hindered by the lack of a bridge at the War Eagle Creek. Benton County Judge Lon Williams formed a bridge commission of himself and two local citizens, C.L. Hart and F.P. Galbraith. Councel Lambeth Hart was born in 1848 and was a prominent farmer and stock trader. In the late 1880s, he served as a deputy under the other bridge commissioner, F.P. Galbraith, who was sheriff.(4)

On April 11, 1907, notice was published that bids for a steel bridge over the War Eagle Creek would be taken May 18, 1907, at the Benton County Courthouse. The plans and specifications were already drawn up by the commissioners who had decided upon a location next to the War Eagle grist mill. The plans, contract, and some miscellaneous notes for the War Eagle Bridge are still in the Benton County Courthouse basement in Bentonville, Arkansas. The plans and contract called for a 182-foot Parker through truss and a 40-foot eastern approach.(5)

CONTRACT

The Illinois Steel Bridge Company of Jacksonville, Illinois won the contract for the bridge. The contract, dated May 18, 1907, committed the company to building the 182-foot steel bridge by January 1, 1908. In return, Benton County would pay $4790.00, ". . .one-half in cash on completion of [the] bridge, and [the] balance in county scrip, redeemable on or before June 20, 1908." The contract is signed by the Benton County bridge commissioners and the Illinois Steel Bridge Company's contracting engineer, Thomas Boles.(6)

CONSTRUCTION

Included in the surviving record is a letter from Boles to Judge Williams dated October 4, 1907, informing Williams that the piers should be completed by October 6 by a Mr. Spohn (about whom nothing else is known). Lumber was provided by a Mr. Denny. Boles also said the pre-fabricated structure was close to completion at the Jacksonville plant.(7)

As a Parker truss, the bridge has the same compression and tension alignment with its members as the more common Pratt truss, but the Parker's top chord is curved rather than straight. Standardization of the bridge helped to offset the expense of having a more complicated design than the Pratt.(8) The current eastern approach on the War Eagle is an unusual, homemade collection of steel. An old photograph located in the reconstructed War Eagle Mill, shows a wooden approach. This may have burned down with the third mill in 1924 and been replaced with the more permanent steel one. The mill was not immediately rebuilt. By 1924, the grist mill business had suffered irreparable damage from the improved transportation--people found it less expensive to get their flour elsewhere.(9)

ENGINEERING DESCRIPTION

The War Eagle Bridge is a steel, single-span, Parker through truss of 183-foot length, comprised of nine panels, with approach spans 40 feet long on the east side and 30 feet long on the west. The overall width is 17 feet, and the roadway is 16 feet from curb-to-curb. The bridge has built-up members, punched eyebars, square eyebars with turnbuckles, and stone and concrete piers.

The polygonal top chord, reaching a maximum height of 30 feet above the deck, is constructed with two channel sections riveted to a continuous top plate with single-bar lacing on the bottom of the chord. The compression forces in the top chord are resisted at the bearing blocks by the two rectangular eyebars of the bottom chord, which are thread cut on each end to pass through and be secured to the block by a nut. Tension forces along the bottom chord of the bridge are passed through pinned connections at each panel point. The top chord is riveted throughout the bridge, but the bottom chord, verticals, and diagonals are all pin-connected, introducing flexibility in the bridge.

The vertical members are channels, flanges turned outward, with single-bar lacing on two sides. At L1-U1 and L8-U8 (see Drawing #1) this built-up section is about 7 feet tall from the bottom of the bottom chord. Two one-inch-square eyebars are pinned to it and connect to the top chord. Similar square eyebars, ranging in dimension from three-quarters inch to one and three-eighths inch, are used as counters in the truss panels. These have turnbuckles to allow the members to be adjusted as necessary. The single eyebar passes between two rectangular eyebar diagonals in all but the end two panels.

The lateral stability of the bridge is maintained by portal bracing, upper lateral rods, sway bracing at each vertical, and floor rods. A double intersection Warren truss acts as the portal brace at each inclined impost. Curved brackets made from angle sections brace the bottom of these four-paneled trusses. Sway bracing consists of a top lateral strut, two channels with lacing, and round rods with turnbuckles crossing beneath the strut to attach to another strut about 5 feet below the top chord. The

top and bottom chords are laterally braced with rods, two in each panel, running diagonally from each panel point.

The floor system consists of eight I-beam stringers resting on I-beam girders at each panel point. The wooden deck features runners along each tire path. The east approach was originally a simple steel stringer system like that on the west end. Old photographs show three spans with a wooden railing supported by three concrete piers and one masonry pier at the main span. The piers are unchanged, but the approach now features J.A.L. Waddell 'A' trusses. The revised approach appears to have been welded together from metal scraps. The top and bottom chords are made from railroad track, and the web members are flat metal grader blades. Round pipe serves as a handrail between the trusses. The wooden floor beams extend past the roadway for small outriggers to brace the trusses.

In 1982, the range work stone abutment on the west bank was replaced with reinforced concrete. The range work stone pier still remains at the east end of the main span.

ENDNOTES

1. Fay Hempstead, Historical Review of Arkansas (Chicago: The Lewis Publishing Company, 1911), p. 1141.

2. Erwin Funk, "Miscellaneous Benton County Firsts," Benton County Pioneer Vol. 4, No. 2 (January 1959), p. 14.

3. Vera Key, "Arkansas Pioneers of 1832 of War Eagle, Arkansas: The Sylvanus Blackburn Family," Benton County Pioneer Vol. 1, No. 1 (September 1955), pp. 1-2. : "War Eagle Mill," visitor's brochure of War Eagle Mill, Route 5, Box 411, Rogers, Arkansas 72756.

4. Arkansas: Benton County Biographies, 1889, Goodspeed reprint (Courtney and Gerlene York, 1974), p. 42.

5. Contract between the Illinois Steel Bridge Company and Benton County, Arkansas, May 18, 1907.

6. Contract between the Illinois Steel Bridge Company and Benton County, Arkansas, May 18, 1907.

7. Thomas Boles, company engineer, letter to Benton County Judge Lon Williams. October 4, 1907.

8. T. Allen Comp and Donald Jackson, Bridge Truss Types (Washington: National Park Service, Historic American Engineering Record).

9. Works Progress Administration, Arkansas: A Guide to the State (New York: Hastings House, 1941), p. 70.

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Arkansas: Benton County Biographies, 1889, Goodspeed reprint. Courtney and Gerlene York, 1974.

Boles, Thomas, company engineer. Letter to Benton County Judge Lon Williams. October 4, 1907.

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Funk, Erwin. "Miscellaneous Benton County Firsts." Benton County Pioneer. Vol. 4, No. 2 (January 1959), p. 14.

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Key, Vera. "Arkansas Pioneers of 1832 of War Eagle, Arkansas: The Sylvanus Blackburn Family," Benton County Pioneer. Vol. I, No. I (September 1955), pp. 1-5.

"War Eagle Mill." Visitor's brochure of War Eagle Mill, Route 5, Box 411, Rogers, Arkansas 72756.

Works Progress Administration. Arkansas: A Guide to the State. New York: Hastings House, 1941.

ILLINOIS STEEL BRIDGE COMPANY

THOMAS BOLES
CONTRACTING ENGINEER

FORT SMITH, ARKANSAS Oct 4 1907.

Hon. Lon Williams,

Bentonville, Arkansas.

Dear Sir:-

Your request for the shop drawings of the War Eagle Bridge has been forwarded to our General Office at Jacksonville, and the prints will no doubt reach you within a few days.

Mr Spohn advises me that he will have the piers completed by October 6th, ad would like for you to inspect the same if convenient. However in case you cannot find time to go to War Eagle to look at these piers you might delegate Mr. A. E. Crossman, who is Justice of that Township, and have him make report to you, as he has been on the ground all the time and is familiar with the work. All the folks at War Eagle are very much pleased with the class of work, and are especially pleased with the fact that the floor of the bridge will be so much above high water.

Mr Denny, of War Eagle, is getting out the lumber; and as the bridge itself is nearly completed at jacksonville, you may expect the bridge to be ready for traffic within the coming month.

Yours very truly,

Thomas Boles.

Contracting Engineer.

In the matter of the War Eagle Bridge.

To the Honorable County Court of Benton County, Arkansas:-

The undersigned citizens and property holders of said County, F.P. Galbreaith and C.L.Hart, having been duly appointed as bridge Commissioners of said County in pursuance of Section 555 of Kirby's Digest beg leave, in conjunction with the Honorable County Judge of said County, to submit the following report:-

We, after being duly sworn as the law directs, proceeded to War Eage Creek or River, the same not being a navigable stream, on May, 13", 1907, and well and truly viewed a bridge site for a bridge to be constructed across the same. We find that a practical point for said bridge to cross said stream can be found about 30 feet below the mill dam at the old War Eagle Mills in Sec.34 Tp.19 N. Range 27.W. Said bridge will be 182 feet in length. We attach hereto and make a part of our report plans and specifications for the bridge which we recommend be adopted as the plans and specifications thereof, and we recommend the construction of said bridge at said point at a cost not exceedings $ 5 . . °°.

Witness our hands this May, 18", 1907.

C L Hart

F.P. Galbreaith

AR-50

County and Probate Clerk
Benton County, Ark.

Marion Douglas, Clerk.

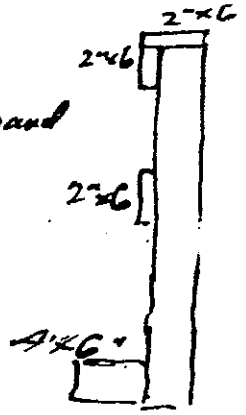
COUNTY COURT:
First Monday in January, April, July and October.

PROBATE COURT:
Third Monday in January, April, July and October.

Bentonville, Ark., ... 190..

Rail 2 lines 2" x 6"
1 " 2 x 6"
Posts 4" x 4" - 1 to each panel
on approach 1 to each cap -

Fellie Guard 4" x 6"



AR-50

Contract

HAER NO. AR-50 PAGE [illegible]

This Agreement, Made the ~~2~~ 18th day of May A. D. 1907.
by and between the **Illinois Steel Bridge Company, of Jacksonville, Illinois, party of the first part,**
and Benton County - Arkansas.
~~of~~ ~~County, State of~~ part ~~y~~ of the second part,
WITNESSETH, That the said party of the first part, for the consideration hereinafter mentioned, agrees to furnish all material, and build and construct for the said party of the second part One 182 foot steel bridge across War Eagle Creek near War Eagle Mills, Ark. and forty foot approach.

and have the same completed on or before the 1st day of January A. D. 1908
Said Bridge to be completed in accordance with the plans and specifications hereunto attached, which are hereby made a part of this contract.

In consideration of the foregoing, materials to be furnished and work executed by said party of the first part, said party of the second part hereby agrees to pay to said party of the first part the sum of Forty seven + ninety Dollars ($ 4790.00) in the following manner to wit:
One half in cash on completion of bridge, and balance in County Scrip, redeemable on or before June 20 1908.

And for the performance of all and every article and agreement above mentioned, the parties hereto do hereby bind themselves each to the other firmly by these presents. It is further agreed by and between the parties hereto, that, should the weather or condition of said stream be such as to preclude the completion of the said Bridge within the time above specified, or should the same be delayed by the failure of the railroads to transport any portion of the same with ~~in such time~~, or from strikes or any other cause or causes beyond the control of the said party of the first part, then the time for the fulfillment of this contract shall be extended for a period not less than that caused by such delay.

IN WITNESS WHEREOF, the said parties of the first part and second parts have hereunto affixed their hands and seals. Signed this 18th day of May A. D. 1907.

C L Hart
J R Caldwell
Commissioners
Lon Williams
Co Judge

Illinois Steel Bridge Co.
By Thomas Boles
Contracting Engineer Agt.